

REMARKS

This Response is responsive to the non-final Office Action mailed September 11, 2007. Claim 1, 3, 5-8, 15-19, 34, 35, 43, 44, 46-48, 52, and 53 are pending. Claims 9-13, 20, 36-42, and 49-51 are withdrawn from consideration. Claims 1, 3, 5, 6, 10, 12, 13, 37, 43, 44, 46, 50, and 51 have been amended. Claims 4 and 45 have been cancelled. In view of the following remarks, as well as the preceding amendments, Applicants respectfully submit that this application is in complete condition for allowance and request reconsideration of the application in this regard.

Rejection Under 35 U.S.C. § 112, 2nd Paragraph

Claim 37 stands rejected under 35 U.S.C. § 112, 2nd Paragraph. Applicant has amended claim 37 to correct a typographical error in the dependency. Applicant notes that, in view of the claim amendment, claim 37 depends from a withdrawn claim and should itself be withdrawn from consideration. In view of this amendment, Applicants request that the Examiner withdraw the rejection.

Rejections Under 35 U.S.C. § 103

Claims 1, 3-8, 15-19, 34, 35, 37, 43-48, 52, and 53 over Choi and Occhipinti

Claims 1, 3-8, 15-19, 34, 35, 37, 43-48, 52, and 53 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Choi et al. (U.S. Patent No. 6,566,704), hereinafter *Choi*, in view of U.S. Publication No. 2004/0027889 to Occhipinti et al. (hereinafter *Occhipinti*). Claims 1 and 43 are independent claims. Claims 4 and 45 have been cancelled and claim 37 has been withdrawn. Applicants respectfully traverse the rejection for the reasons set forth below.

Claim 1 has been amended to include the subject matter of dependent claim 4, now cancelled. With regard to independent claim 1, the Examiner contends that “Fig. 3F and related text” of *Choi* discloses a semiconductor device structure that includes “at least one semiconducting nanotube 100.” However, to reject dependent claim 4 based upon the combination of *Choi* and with the secondary reference *Occhipinti*, the Examiner contends on

page 4 of the Office Action that this deficiency can be remedied because of the disclosure contained in Figure 4B of Choi.

Figure 4B of Choi discloses a device construction containing multiple nanotubes (100). However, Figures 4A and 4B of Choi teach that, when multiple nanotubes (100) are present in the device construction, the gate electrode (20) and gate dielectric (30) are both disposed above the nanotubes (100) in an overlying relationship. Figures 4A and 4B of Choi also teach that, when multiple nanotubes (100) are present in the device construction, the gate dielectric (30) is disposed on a bottom surface of the gate electrode (20), instead of on a sidewall as that term is understood by a person having ordinary skill in the art. Moreover, Figures 4A and 4B of Choi also teach that, when multiple nanotubes (100) are present in the device construction, the the gate electrode (20) and gate dielectric (30) are separated from one end of the nanotubes (100) by the drain (50). As a result, each of the nanotubes (100) in Figures 4A and 4B of *Choi* do not extend “substantially vertically between opposite first and second ends at respective locations adjacent to said vertical sidewall” of gate electrode (20) and the gate dielectric (30) between the gate electrode (20) and the nanotubes (100) is not disposed on a sidewall of gate electrode (20), as required by Applicants’ claim 1.

Consequently, *Choi* teaches that, were one to attempt to modify the device structure shown in Figure 3F to include multiple nanotubes (100) as shown in Figures 4A and 4B, the gate electrode (20) must be moved so that the multiple nanotubes (100) are no longer positioned adjacent to a vertical sidewall of the gate electrode (20). In addition, this attempted modification would require that the gate dielectric (30) be moved so that it is no longer on a sidewall of the gate electrode (20). Furthermore, this attempted modification would require that the gate electrode (20), gate dielectric (30), and drain (50) be rearranged as shown in Figures 4A and 4B such that the gate electrode (20) and gate dielectric (30) are above the drain (50), instead of below the drain (50) as shown in Figure 3F.

Furthermore, according to MPEP § 2143, the prior art can be modified or combined to reject claims as *prima facie* obvious as long as there is a reasonable expectation of success. In this instance, a person having ordinary skill in the art would not appreciate from the disclosure of multiple nanotubes associated with Figures 4A and 4B of *Choi* that a reasonable expectation of success exists to modify the structure shown in Figure 3F *Choi* as proposed by the Examiner if

this modification requires that the gate electrode (20) be relocated to a different location in the device structure. As mentioned above, the specification of *Choi* itself recognizes that this modification proposed by the Examiner requires a wholesale rearrangement of the elements, including relocation of the gate electrode (20), gate dielectric (30), and drain (50), of the device structure of Figure 3F. *See* column 4, line 34 to column 5, line 7. Hence, these are not obvious modifications that a person having ordinary skill in the art would have made to the device structure of Figure 3F with a reasonable expectation of success.

Choi expressly requires a different embodiment with a different arrangement of the gate electrode (20), gate dielectric (30), and drain (50), if multiple nanotubes (100) are present, as in Figures 4A and 4B, than if only a single nanotube (100) is present, as in Figure 3F. A *prima facie* case of obviousness may be rebutted by showing that the art, in any material respect, teaches away from the claimed invention. This requirement for a different embodiment is materially teaching away from modifying the device structure in Figure 3F as proposed by the Examiner.

Occhipinti fails to remedy these deficiencies in *Choi*.

For at least these reasons, Applicants submit that the Examiner has failed to properly support a case of *prima facie* obviousness with regard to claim 1. Therefore, Applicants respectfully request that the Examiner withdraw this rejection.

Because claims 3, 5-8, 15-19, 34, and 35 depend from independent claim 1, Applicants submit that these claims are also patentable for at least the same reasons discussed in Applicants' preceding remarks. Furthermore, each of these claims recites a unique combination of elements not disclosed or suggested by the combination of *Occhipinti* with *Choi*.

Applicants' independent claim 43, as amended, is patentable for at least the same or similar reasons as independent claim 1. For at least this reason, Applicants respectfully request that the Examiner withdraw the rejection.

Because claims 44, 46-48, 52, and 53 depend from independent claim 43, Applicants submit that these claims are also patentable for at least the same reasons discussed above. Furthermore, each of these dependent claims recites a unique combination of elements not disclosed or suggested by the combination of *Choi* and *Occhipinti*.

Claims 5, 6, 34, 37, and 46 over Choi, Occhipinti, and Farnworth

Claims 5, 6, 34, 37, and 46 stand rejected under 35 U.S.C. § 103(a) as being unpatentable *Choi* and *Occhipinti* further in view of *Farnworth* et al. (U.S. Patent No. 6,515,325), hereinafter *Farnworth*. Claim 37 has been withdrawn from consideration. Because claims 5, 6, and 34 depend from independent claim 1 and claim 46 depends from independent claim 43, Applicants submit that these dependent claims are patentable for at least the same reasons. Furthermore, these dependent claims recite unique combinations of elements not taught, disclosed or suggested by the combination of *Choi*, *Occhipinti*, and *Farnworth*.

Conclusion

Applicants have made a bona fide effort to respond to each and every requirement set forth in the Office Action. In view of the foregoing remarks and amendments, this application is submitted to be in complete condition for allowance. Accordingly, a timely notice of allowance to this effect is earnestly solicited. In the event that any issues remain outstanding, the Examiner is invited to contact the undersigned to expedite issuance of this application.

Applicants do not believe fees are due in connection with filing this communication. If, however, any fees are necessary as a result of this communication, the Commissioner is hereby authorized to charge any under-payment or fees associated with this communication or credit any over-payment to Deposit Account No. 23-3000.

Respectfully submitted,

December 6, 2007

Date

/William R. Allen/

William R. Allen, Ph.D.

Reg. No. 48,389

WOOD, HERRON & EVANS, L.L.P.

2700 Carew Tower

441 Vine Street

Cincinnati, Ohio 45202

Telephone: (513) 241-2324

Faximile: (513) 241-6234